

**A new species of *Pogonophryne*
(Pisces: Perciformes: Artedidraconidae) from East Antarctica**

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Abstract.—A new species of notothenioid fish, *Pogonophryne squamibarbata*, is described from East Antarctica. This dorsally-spotted species belongs to the “*mentella*” group of the genus and is characterized by having a relatively short mental barbel (16% SL) with bluntly palmate, overlapping, scale-like processes on its terminal expansion, a wide interorbital region (6.9% SL), and a long opercular-subopercular distance (19.2% SL).

German research cruises of the R/V *Polarstern* in Antarctic waters have yielded several new species of the artedidraconid genus *Pogonophryne* (Eakin 1987, Balushkin & Eakin 1998, Eakin & Balushkin 1998). The “*mentella*” group is the most speciose of the genus, comprising at least 10 species, three of which have been recently described (Balushkin & Eakin 1998, Eakin & Balushkin 1998, Eakin & Eastman 1998). This paper continues our descriptions of new species of *Pogonophryne* in the Zoological Museum collections at Hamburg University.

Measurements and counts follow those of Balushkin & Eakin (1998) and Eakin & Eastman (1998). Opercular-subopercular distance is measured from the posterior edge (hook) of the opercular bone to the anterior edge of the subopercular bone. Measurements are presented as percentages of standard length unless otherwise indicated. ISH refers to the Zoological Museum collections (formerly Institut für Seefischer-ei) currently maintained at Hamburg University (ZMH).

Pogonophryne squamibarbata,
new species
Figs. 1–2

Holotype.—ISH 65-1991; male, 147 mm SL; R/V *Polarstern* station 211, East Ant-

arctica (69°58.9'S, 05°8.4'E), 651–742 m; 10 Mar 1991.

Diagnosis.—This species of *Pogonophryne* belongs to the “*mentella*” group. The relatively short (16% SL) mental barbel has a terminal expansion composed of bluntly palmate, flattened processes arranged in an overlapping, scale-like pattern. This species also has a wide interorbital region (6.9% SL) and a long opercular-subopercular distance (19.2% SL).

Description.—Body robust anteriorly, tapering to low, narrow caudal peduncle. Head length 43.5; posttemporal ridges not well developed (upper limb of posttemporal bone not arched upward to form a prominent curved ridge), depth of head at this level 19.7; head width at preoperculars 37.4. Body depth at second dorsal fin origin 17.3; body depth at anal fin origin 13.6; body width at anal fin origin 10.5; caudal peduncle depth 6.5. Snout broadly rounded in dorsal view; internostril distance 9.2; snout length 8.6; eye filling orbit; diameter of orbit 9.9. Interorbital region wide, bony measurement 6.9. Opercular-subopercular distance long, 19.2. Postorbital length of head 23.7. Jaw width at posterior ends of maxillaries 25.5. Upper jaw length 19.3; posterior end of maxillary extending slightly beyond pupil of eye; lower jaw project-



Fig. 1. *Pogonophryne squamibarbata*, holotype, ISH 65-1991; male, 147 mm SL.

ing beyond upper a distance 7.8 of head length. Tongue long, extending anteriorly slightly in front of tip of upper jaw. Upper jaw with two rows of teeth (largest near symphysis) in a broad arc. Lower jaw teeth in two rows near symphysis, becoming uniserial posteriorly (nine large teeth on both sides) in a V-shaped pattern. Mental barbel (Fig. 2) rather short (16% SL) and with a terminal expansion composed of bluntly palmate, flattened processes arranged in an overlapping, scale-like pattern and continuing onto stalk; barbel length 16.0; terminal expansion 34.0 of barbel length and slightly wider than stalk. Anterior gillrakers on first arch $2 + 0 + 7 = 9$; posterior gillrakers $0 + 1 + 7 = 8$; total 17.

First antedorsal distance 37.4; second antedorsal distance 46.3; anteanal distance 64.6. Length of second dorsal fin base 52.4; length of anal fin base 33.0; length of caudal fin 25.3; length of pectoral fin 28.7; width of pectoral fin base 10.5; length of pelvic fin 20.4. Interdorsal distance 7.5. First dorsal fin with two spines of about equal length, 9.2. Second dorsal fin with 27 rays; length of longest (fifth) ray 15.3. Ratio of longest first dorsal fin spine to longest second dorsal fin ray 0.60. Anal rays 17. Pectoral rays 20. Upper lateral line with about 26 (left) and 27 (right) pores (tubular scales), ending under the twenty-first ray of the second dorsal fin. Middle lateral line with about 11 tubular scales (13 pores) on the left side and 11 tubular scales on the right side; tubular scales originate under the eighteenth ray of the second dorsal fin. Cephalic lateral-line pores typical for *Pogonophryne*: preoperculo-mandibular canal with nine pores; infraorbital canal with seven pores; supraorbital canals with two nasal pores, two interorbital pores, and one unpaired coronal pore; temporal canal with six pores; and supratemporal canal incomplete across occiput (one pore on each side). Vertebrae $16 + 21 = 37$ (second preural vertebra appears double, being longer than the others and possessing two neural and two

hemal spines, but is counted as one element).

Radiographic analysis of skeleton.—Number of vertebrae to first pterygiophore of first dorsal fin 2; to first pterygiophore of second dorsal fin 6; to first pterygiophore of anal fin 16. Free caudal vertebrae counting from last pterygiophore of second dorsal fin 6; counting from last pterygiophore of anal fin 6. Four pterygiophores anterior to first pterygiophore of second dorsal fin; the anterior two support spines of the first dorsal fin, while the posterior two are rayless pterygiophores. One pterygiophore anterior to first caudal vertebra under abdominal section of vertebral column. Four hypural plates attached to urostyle; parhypural (PH) + lower complex hypural (H1 + H2) + upper complex hypural (H3 + H4) + minimal hypural (H5). All hypural plates except H5 fused to urostyle. Caudal fin with 21 rays (4 upper procurrent + 13 principal + 4 lower procurrent). Distribution of principal caudal rays with reference to hypural plates: 1–6–4–2. Epurals 3, the anterior two of which resemble in shape the neural spine of the first preural vertebra. One pair of uro-neurals.

Color in alcohol.—Head and body with brownish markings dorsally and laterally on yellowish background. Markings on head in the form of round spots and vermiculations; those on body larger and more irregular. A broad, dark horizontal marking extends along base of anal fin. Ventral surfaces of head and body dusky and unmarked. First dorsal fin light; second dorsal fin with dark oblique stripes. Anal fin light. Caudal fin with about six dark vertical stripes. Pectoral fins with about six dark vertical stripes. Pelvic fins light. Mental barbel light.

Etymology.—Named for the overlapping, scale-like processes on the mental barbel (Latin *squama*: a scale; *barb*: a beard).

Comparative notes.—The new species belongs to the “*mentella*” group of the genus which is generally characterized by having a well developed mental barbel (elongation, complex terminal expansion,



Fig. 2. Mental barbel of *Pogonophryne squamibarbata*, holotype; a, terminal expansion ($\times 10$); b, detail of terminal expansion showing overlapping, palmate processes ($\times 40$).

or both), relatively undeveloped posttemporal ridges (upper limb of posttemporal bone not arched upward to form a prominent curved ridge), and large, sparsely distributed, round spots and vermiculations on the dorsal and lateral surfaces of the head (Balushkin & Eakin 1998). The mental barbel somewhat resembles that of *P. mentella* in having a terminal expansion composed of bluntly palmate, flattened processes. However, the barbel of *P. squamibarbata* is much shorter (16% SL) than that of the holotype of *P. mentella* (27.1% SL; Andriashev 1967) and has a relatively longer terminal expansion (34% of barbel length compared to 26.4% of barbel length; measured from Andriashev 1967, Fig. 1). The scale-like pattern of densely packed, overlapping processes on the mental barbel of *P. squamibarbata* is unlike that of any other species of *Pogonophryne*. This species also has a wide interorbital region (6.9% SL) and a long opercular-subopercular distance (19.2% SL).

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Literature Cited

- Andriashev, A. P. 1967. A review of the plunder fishes of the genus *Pogonophryne* Regan (Harpagiferidae) with descriptions of five new species from the East Antarctic and South Orkney Islands. Pp. 389–412 in A. P. Andriashev and P. V. Ushakov, eds., Biological results of the Soviet Antarctic Expedition (1955–1958), vol. 3. Leningrad Zoological Institute, Academy of Sciences of the USSR.
- Balushkin, A. V., & R. Eakin. 1998. A new toad plunderfish *Pogonophryne fusca* sp. nova (Fam. Artedidraconidae: Notothenioidei) with notes on species composition and species groups in the genus *Pogonophryne* Regan.—*Journal of Ichthyology* 38:574–579 (English translation from *Voprosy Ikhtiologii* 38:598–603).
- Eakin, R. R. 1987. Two new species of *Pogonophryne* (Pisces, Harpagiferidae) from the Weddell Sea, Antarctica.—*Archiv für Fischereiwissenschaft* 38:57–74.
- , & A. V. Balushkin. 1998. A new species of toadlike plunderfish *Pogonophryne orangiensis* sp. nova (Artedidraconidae, Notothenioidei) from the Weddell Sea, Antarctica.—*Journal of Ichthyology* 38:800–803 (English translation from *Voprosy Ikhtiologii* 38:830–833).
- , & J. T. Eastman. 1998. New species of *Pogonophryne* (Pisces, Artedidraconidae) from the Ross Sea, Antarctica.—*Copeia* 1998:1005–1009.